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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/785,614

02/24/2004

Douglas E. LeCrone

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7590

01/05/2007

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EXAMINER

MEHRMANESH, ELMIRA

ART UNIT

PAPER NUMBER

2113

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/785,614

Applicant(s)

LECRONE ET AL.

Examiner

Elmira Mehrmanesh

Art Unit

2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This action is in response to an amendment filed on October 24, 2006 for the application of LeCrone et al., for a "Method and apparatus for enabling consistent ancillary disk array storage device operations with respect to a main application" filed February 24, 2004.

Claims 1-9 are pending in the application.

Claims 1-9 are rejected under 35 USC § 103.

Claims 1, 2, 4, and 7 have been amended.

### ***Double Patenting***

The Terminal Disclaimer filed on October 23, 2006 has been considered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gagne et al. (U.S. Patent No. 6,370,626) in view of Suzuki et al. (U.S. Patent No. 7,093,087).

As per claim 1, Gagne discloses in a data processing system (Fig. 1, element 10) including a host (Fig. 1, element 11) and at least one disk array storage device (Fig. 1, element 14) including a plurality of first logical devices (Fig. 1, elements 34-37) for interacting with a first application (Fig. 1, element 12) and that constitute a consistency group and one second logical device (Fig. 1, elements 34-37) for interacting in a first mode as a mirror for a corresponding one of the first logical devices in the consistency group (col. 4, lines 23-35) a method for enabling the shift of the second logical devices to the second mode in a consistent manner whereby each second logical device can interact with a second application (Fig. 1, element 13) with read and write capabilities (col. 4, lines 40-45) said method for shifting to the second mode comprising the steps of:

D) enabling write operations to all the first logical devices in the consistency group upon completion of said shifting (Fig. 6, element 194) whereby interactions between the first application and all the first logical devices in the consistency group resume and whereby the second application can interact with the second logical devices in the consistency group (col. 14, lines 14-20).

Gagne fails to explicitly disclose a generating a request in the consistency group.

Suzuki teaches:

A) generating a request data structure for each second logical device in the consistency group (Fig. 6, element S1000)

B) preventing write operations to each of the first logical devices in the consistency group associated with the second logical devices identified in the request data structure (Fig. 6)

C) shifting each of the at least one identified second logical device in the consistency group to the second mode after said write prevention operation occurs (Fig. 9).

It would have been obvious to one of ordinary skill in the art at the time the invention to use the method and apparatus for independent and simultaneous access to a common data set of Gagne et al. in combination with the method for controlling storage device controller of Suzuki et al. to enhance recovery operations in storage devices. One of ordinary skill in the art at the time the invention would have been motivated to make the combination because Gagne et al. discloses a data storage facility that in a first operating mode provides redundant data storage and in a second operating mode enables one copy of a data set to be accessed by another data process (Fig. 1). Suzuki et al. discloses changing from a first status to a second status in which a relationship between the first plurality of logical volumes and the second plurality of logical volumes is split so that the second plurality of logical volumes can be accessed from said at least one information processing device or another information processing device via the disk controller (Fig. 6).

As per claim 2, Gagne discloses the disk array storage device (Fig. 1, element 14) includes a buffer (Fig. 1, element 20) and a write operation includes a first transfer of data from a host to the buffer as a write pending entry and a second transfer of the write pending entry to a logical device and wherein said shifting of a second logical device to the second mode includes detaching the second logical device from its corresponding first logical device, attaching the second logical device to the second application (col. 6, lines 57-61) and managing the transfer of write pending entries in the buffer (Fig. 3, element 100), said initiation of the shift of the identified second logical devices including said detaching and attaching steps (col. 6, lines 57-61 and col. 14, lines 14-20).

As per claim 3, Gagne discloses managing of write pending entry transfers occurs after said write operations to said first logical devices resume (col. 10, lines 59-67 through col. 11, lines 1-6) and (Fig. 10A, 10B).

As per claim 4, Gagne discloses in a data processing system (Fig. 1, element 10) including a host (Fig. 1, element 11) and at least one disk array storage device (Fig. 1, element 14) including a plurality of first logical devices (Fig. 1, elements 34-37) for interacting with a first application (Fig. 1, element 12) and that constitute a consistency group and a second logical device (Fig. 1, elements 34-37) that interacts in a first mode as a mirror at least one of the first logical device in the consistency group (col. 4, lines 23-35) a control means for enabling the shift of each of the second logical devices to a

second mode in a consistent manner whereby each second logical device can interact with a second application (Fig. 1, element 13) with read and write capabilities (col. 4, lines 40-45) said controller comprising:

D) enabling write operations to all the first logical devices in the consistency group upon completion of said shifting (Fig. 6, element 194) whereby interactions between the first application and all the first logical devices in the consistency group resume and whereby the second application can interact with the second logical devices in the consistency group (col. 14, lines 14-20).

Gagne fails to explicitly disclose a generating a request in the consistency group.

Suzuki teaches:

A) generating a request data structure for each second logical device in the consistency group (Fig. 6, element S1000)

B) preventing write operations to each of the first logical devices in the consistency group associated with the second logical devices identified in the request data structure (Fig. 6)

C) shifting each of the at least one identified second logical device in the consistency group to the second mode after said write prevention occurs (Fig. 9).

As per claim 5, Gagne discloses the disk array storage device (Fig. 1, element 14) includes a buffer (Fig. 1, element 20) and a write operation includes a first transfer of data from a host to the buffer as a write pending entry and a second transfer of the write pending entry to a logical device and wherein said shifting of a second logical

device to the second mode includes detaching the second logical device from its corresponding first logical device, attaching the second logical device to the second application (col. 6, lines 57-61) and managing the transfer of write pending entries in the buffer (Fig. 3, element 100) said interaction means enabling the resumption of interaction between the first application and corresponding first logical devices after the detaching and attaching of all the identified second logical devices (col. 14, lines 14-20).

As per claim 6, Gagne discloses each of said identified second logical devices includes means for managing write pending entry transfers after said interaction means enables the resumption of interactions between the first application and the first logical devices (col. 10, lines 59-67 through col. 11, lines 1-6) and (Fig. 10A, 10B).

As per claim 7, Gagne discloses a program for operation in a data processing system (Fig. 1, element 10) including a host (Fig. 1, element 11) and at least one disk array storage device (Fig. 1, element 14) including a plurality of first logical devices (Fig. 1, elements 34-37) for interacting with a first application (Fig. 1, element 12) and that constitute a consistency group and at least one second logical device for interacting in a first mode as a mirror for a corresponding one of the first logical devices in the consistency group (col. 4, lines 23-35) the program enabling the shift of the second logical devices (Fig. 1, elements 34-37) to the second mode in a consistent manner whereby each second logical device can interact with a second application (Fig. 1,



element 13) with read and write capabilities (col. 4, lines 40-45), said program comprising:

D) enabling write operations to all the first logical devices in the consistency group upon completion of said shifting (Fig. 6, element 194) whereby interactions between the first application and all the first logical devices in the consistency group resume and whereby the second application can interact with the second logical devices in the consistency group (col. 14, lines 14-20).

Gagne fails to explicitly disclose a generating a request in the consistency group.

Suzuki teaches:

A) generating a request data structure for each second logical device in the consistency group (Fig. 6, element S1000)

B) preventing write operations to each of the first logical devices in the consistency group associated with the second logical devices identified in the request data structure (Fig. 6)

C) shifting each of the at least one identified second logical device in the consistency group to the second mode after said write prevention operation occurs (Fig. 9).

As per claim 8, Gagne discloses disk array storage device (Fig. 1, element 14) includes a buffer (Fig. 1, element 20) and a write operation includes a first transfer of data from a host to the buffer as a write pending entry (Fig. 3, element 100) and a second transfer of the write pending entry to a logical device and wherein said shift

initiating module detaches the second logical device from its corresponding first logical device, attaches the second logical device to the second application and a write pending module manages the transfer of write pending entries in the buffer (col. 14, lines 14-20).

As per claim 9, Gagne discloses write pending module manages write pending entry transfers after said write operations to said first logical devices resume (col. 10, lines 59-67 through col. 11, lines 1-6) and (Fig. 10A, 10B).

### ***Response to Arguments***

Applicant's arguments have been fully considered with the examiner's response detailed below. Applicant's arguments see pages 6-13, filed October 24, 2006 with respect to the rejection(s) of claim(s) 1-9 under 35 USC § 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made over Gagne et al. (U.S. Patent No. 6,370,626) in view of Suzuki et al. (U.S. Patent No. 7,093,087). Refer to the corresponding section of the claim analysis for details.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *consistent split of information in one or more BCVs attached to multiple standard devices*) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elmira Mehrmanesh whose telephone number is (571) 272-5531. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

